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Two new species of genus *Leistus* Frölich, 1799 from Turkey (Coleoptera: Carabidae: Nebriini)

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Two new species of genus *Leistus* Frölich, 1799 from Turkey (Coleoptera: Carabidae: Nebriini). - Two new species of genus *Leistus* Frölich, 1799, belonging to subgenus *Leistus* are described and illustrated: *L. schuelkei* sp. n. and *L. trabzonicus* sp. n. (type locality: Turkey, Trabzon, ca 40 km S Of, S Uzungöl, 2050 m altitude). They are compared with similar species of subgenus *Leistus* known from Turkey. A check-list for all members of subgenus *Leistus* from Turkey is provided, comprising data on distribution, type locality and deposition of the holotype or lectotype.

Keywords: Taxonomy - new species - Nebriini - Palaearctic region - Turkey.

INTRODUCTION

Seven species of genus *Leistus* Frölich, 1799, subgenus *Leistus* were recorded by Farkač (2005) from Turkey: *L. caucasicus* Chaudoir, 1867, *L. chaudoiri* Perrault, 1986, *L. femoralis* Chaudoir, 1846, *L. fulvibarbis fulvibarbis* Dejean, 1826, *L. fulvus* Chaudoir, 1846, *L. ledouxi* Perrault, 1986, and *L. ovitensis* Perrault, 1974.

In this paper, which is based on the study of new material and on a complete literature survey (Reitter 1883, 1887; Jedlička 1968; Perrault 1974, 1975, 1986, 1988, 1991; Farkač & Janata 2003; Farkač 2005), we describe two new brachypterous species from Turkey belonging to subgenus *Leistus*. The most similar and probably most closely related species are *L. chaudoiri* Perrault (endemic species in the Meskhetskij Khrebet, Georgia, and in the Doğu Karadeniz Dağları, Turkey) and *L. ledouxi* Perr. (endemic in the Kaçkar Dağı, Turkey).

MATERIAL AND METHODS

Material examined is deposited in the collections of institutions and persons listed below:

MNHUB Museum für Naturkunde der Humboldt-Universität, Berlin, Germany
MHNG Muséum d'histoire naturelle, Genève, Switzerland
cFAR Coll. Jan Farkač, Prague, Czech Republic
cWR Coll. David W. Wrase, Berlin, Germany

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Total body length (BL) is measured from the clypeus to the apex of the right elytron; the width of the head (HW) as the maximum linear distance across the head, including the compound eyes; the length of the head from apex of labrum to anterior margin of pronotum; the length of the pronotum (PL) from the anterior to the posterior margin along the midline; the length of the elytra (EL) from the tip of scutellum to the apex; the width of the pronotum (PW) and elytra (EW) at their broadest point; the width of the pronotal base (PBaW) between the tip of the hind angles. These measurements, made at a magnification of 16x and 32x, respectively and using an ocular micrometer in a stereo microscope, were combined in ratios or listed as follows:

PW/PL: width /length of pronotum;
PW/HW: width of pronotum /width of head;
PW/PBaW: width of pronotum /width of pronotal base;
EL/EW: length/width of elytra;
EW/PW: width of elytra/ width of pronotum;
EL/PL: length of elytra/length of pronotum;

For comparisions we studied the holotype of *L.* (s. str.) *chaudoiri* Perrault, 1986 (MNHUB), male, glued to card, with extracted aedeagus, glued to separate card, and labelled:

"Abbastuman Sekar Pass" / "femoralis Chd." / "femoralis Chd." (white labels, all handwritten) / "HUB 733" (white label, handwritten) / *Leistus reitteri* Jacobson ?? det. G.G. Perrault, 1982 (species and author's name handwritten, rest printed on white label / Zool. Mus. Berlin (printed, white label) / „HOLOTYPE" (handwritten on red label) / „HOLOTYPE Leistus chaudoiri mihi, G. G. Perrault det. 1985" (white label, handwritten, author's name printed). (A forward slash is used for separating different labels).

Its morphometric data are [mm]: BL= 7.40, HW = 1.60, PW = 1.50, PBaW = 1.14, PL = 1.12, EW = 2.65, EL = 4.30.

Further material investigated: *Leistus* (s.str.) *ledouxi* Perrault, 1986: Turkey (Rize), Kaçkar Dağı, Ayder, 1400-1700 m, 21.-28.VIII.1989, Aistleitner & Görgner leg. (1 female, cWR); Turkey, Murgul-Artvin, Alaca Dag, 10.VI.1993, M. Janata leg. (1 female, cFAR).

SYSTEMATIC PART

Leistus (s. str.) ***schuelkei*** sp. n. Figs 1-3

HOLOTYPE: Male, labelled: "Trabzon, ca 40 km S Of, S Uzungöl, 2050 m altitude, (grass and moss sift.), 40°35'57N, 40°16'56E, 4.VIII.2006, M. Schülke [34]" (cFAR).

PARATYPES: 1 male, 3 females, the same data as holotype (MHNG, cWR).

DIAGNOSIS: *L. schuelkei* sp. n. is in its habitus similar to both *Leistus* (s.str.) *chaudoiri* Perrault, 1986 and *L.* (s.str.) *ledouxi* Perrault, 1986, and also to *L.* (s.str.) *trabzonicus* sp. n. but the new species differs distinctly from them by some morphometric features, the shape of elytral humerus, presence of a humeral tooth (except *L. chaudoiri* which also has dentate elytral humeri), and the construction of median lobe of aedeagus, respectively.

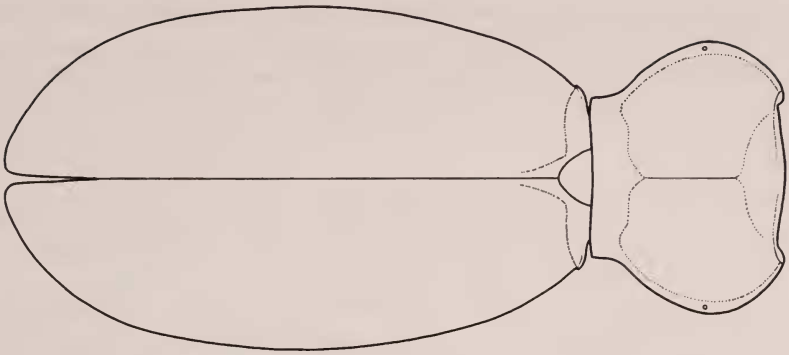
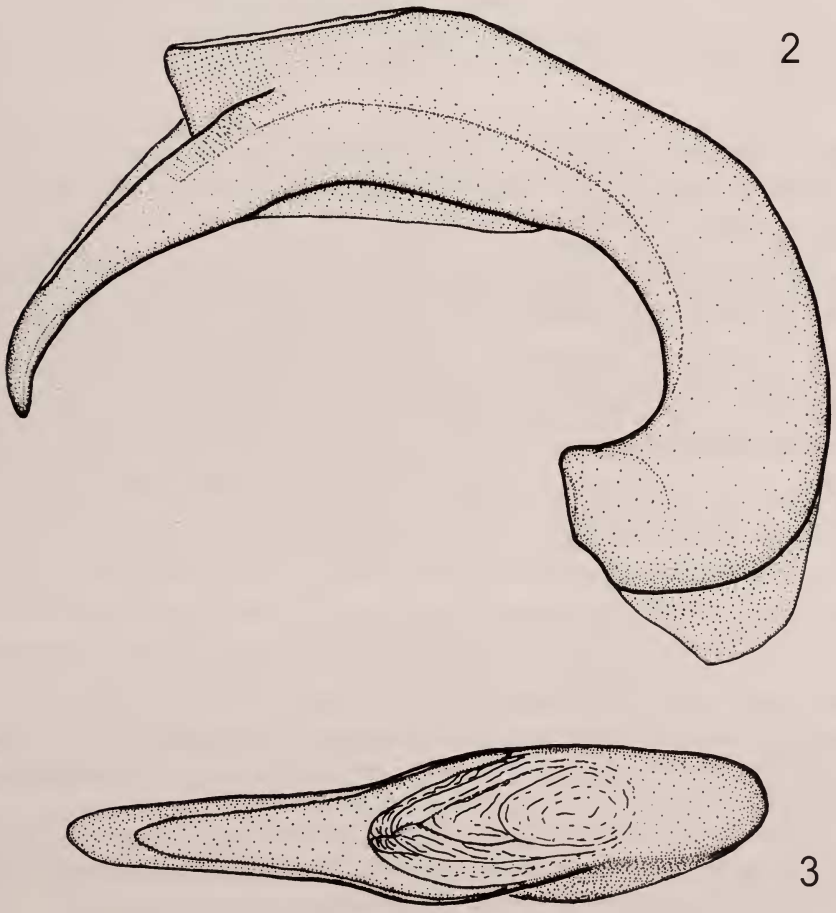


FIG. 1. Pronotum and elytra of *Leistus* (s.str.) schuelkei sp. n. (holotype).



FIGS 2-3

Median lobe of aedeagus of *Leistus* (s.str.) *schuelkei* sp. n. (holotype). (2) Lateral view. (3) Dorsal view.

Morphometric data of male (holotype) (in mm): BL = 7.90, HW = 1.75, PW = 2.23, PBaW = 1.29, PL = 1.57, EW = 2.75, EL = 4.65.

Morphometric data of paratypes (in mm): 1 male: BL = 8.00, HW = 1.76, PW = 2.29, PBaW = 1.33, PL = 1.65, EW = 2.80, EL = 4.80 and 3 females: BL = 7.80-8.10, HW = 1.71-1.77, PW = 2.21-2.30, PBaW = 1.27-1.32, PL = 1.57-1.65, EW = 2.85-2.90, EL = 4.80-5.00.

DESCRIPTION: Colour piceous-black, tarsi, tibiae, antennae and maxillary appendages paler, brownish. Mandibles brownish. Eyes prominent, convex. Gular setae not inserted on transverse carina (habitus of holotype as in Fig. 1).

Pronotum (Fig. 1): Cordiform, maximum width at middle, with midline distinct. Lateral furrow, basal depression, and depression at anterior margin strongly punctured. Posterior angles rectangular, sharp at tip.

Elytra (Fig. 1): Long-oval, of drop-like shape, maximum width behind middle (at second third, counted from anterior), with humeral angle completely reduced, and with humeral tooth strongly developed. Striae and lateral groove of elytra strongly punctured, punctures somewhat weaker in apical half. Hindwings strongly reduced to small scales.

Median lobe of aedeagus (Figs 2, 3): Robust, strongly curved, ventrally with a keel in central third. Apical lamella strong and long, apically somewhat acute, and bill-like deflexed (lateral view). In dorsal view slender with apical lamella slender, evenly narrowed, and apically narrowly rounded.

COMPARISONS: *L. schuelkei* sp. n. differs from *L. ledouxi* Perr. by a different shape of pronotum (ratio PW/PBaW 1.70-1.74 in female *L. schuelkei* sp. n., and 1.55 in female *L. ledouxi*; ratio PW/PL 1.36-1.40 in female *L. schuelkei* sp. n. and 1.26 in female *L. ledouxi*); by its rectangular pronotal posterior angles (in *L. ledouxi* they are acute), and by strong pronotal humeral teeth (see Perrault, 1986: 61, Fig. 6). *L. schuelkei* sp. n. may be distinguished from *L. chaudoiri* Perr., which also has a strongly developed elytral humeral tooth, by construction of the median lobe which in *L. chaudoiri* has a short and wide apical lamella (compare Fig. 2, 3 with Figs 8 a, b in Perrault 1986: 61). *L. trabzonicus* sp. n. from the same locality, described below, has a different shape of the elytra (in *L. trabzonicus* sp. n., the elytra are more regularly rounded with maximum width about at middle and have the humeri somewhat more suggested, the humeral tooth is missing, the median lobe (Figs 5, 6) is somewhat smaller with apical lamella flat, only weakly curved, and apically not distinctly deflexed (lateral view), median lobe wide with apical lamella short and wide, somewhat directed to the left (dorsal view), while in *L. schuelkei* sp. n. the median lobe (Figs 2, 3) is somewhat larger and more robust, with apical lamella strong and long, apically somewhat acute, and bill-like deflexed (lateral view), median lobe slender with apical lamella slender, evenly narrowed, and apically narrowly rounded (dorsal view).

ETYMOLOGY: The new species is cordially dedicated to our friend and colleague Michael Schülke (Berlin), prestigious specialist in Staphylinidae, who collected the members of both new species, described in this paper.

DISTRIBUTION: Currently only known from the type locality, which is situated in a high mountain steppe south of the village Of (south of Uzungöl, Trabzon province). Most probably with a limited range due to its inability to fly.

HABITAT: Collected in a high mountain steppe, free of timber, in a natural drainage channel (Fig. 7) by sifting grass and moss, at an altitude of about 2050 m (timber line in this area at about 1800 m). Sympatric and syntopic with *Leistus trabzonicus* sp. n.

***Leistus* (s. str.) *trabzonicus* sp. n.** Figs 4-6

HOLOTYPE: Male, labelled: "Trabzon, ca 40 km S Of, S Uzungöl, 2050 m (grass, moss sift.), 40°35'57N, 40°16'56E, 4.VIII.2006, M. Schülke [34]" (cFAR).

PARATYPES: 3 females, the same data as holotype (MHNG, cWR).

DIAGNOSIS: *L. trabzonicus* sp. n. is in its habitus similar to *L.* (s. str.) *chaudoiri* Perrault, 1986 and *L. ledouxi* Perrault, 1986, but the new species distinctly differs from these species by some morphometric features, more suggested elytral humeri, and by shape of aedeagus, respectively.

Morphometric data of male (holotype) (in mm): Body length 7.50, HW = 1.73, PW = 2.25, PBaW = 1.25, PL = 1.48, EW = 2.90, EL = 4.68.

Morphometric data of 3 females (paratypes) (in mm): Body length 7.80-8.00, HW = 1.71-1.76, PW = 2.20-2.27, PBaW = 1.24-1.25, PL = 1.47-1.50, EW = 2.85-2.95, EL = 4.80.

DESCRIPTION: Colour piceous-black, tarsi, tibiae, antennae and maxillary appendages paler and brownish. Mandibles brownish. Eyes prominent, convex. Gular setae not inserted on transverse carina (habitus of holotype as in Fig. 4).

Pronotum (Fig. 4): Cordiform, maximum width before middle. Lateral groove, basal depression and depression at anterior margin coarsely punctate. Lateral groove moderately widened in middle part, with distinct midline, posterior angles weakly acute, weakly directed outwards.

Elytra (Fig. 4): Oval, regularly rounded, with maximum width about middle, humeri somewhat suggested, humeral tooth missing. Striae and lateral groove of elytra coarsely, distinctly punctured, punctures somewhat less distinct in posterior third of elytra. Hindwings strongly reduced to small scales.

Median lobe of aedeagus (Figs 5, 6): Relatively small with apical lamella thin, only weakly curved, and apically not distinctly deflexed (lateral view), median lobe wide with apical lamella short and wide, distinctly directed to the left (dorsal view).

COMPARISIONS: *L. trabzonicus* sp. n. can be differentiated from *L. ledouxi* (we saw the female holotype and further two females) by a different shape of the transverse pronotum (ratio PW/ PBaW 1.76-1.84 in female *L. trabzonicus* sp. n. and 1.55 in *L. ledouxi*), ratio PW/PL 1.49-1.52 in *L. trabzonicus* sp. n. and 1.26 in *L. ledouxi* Perr.), and by more distinct humeri of elytra (see Perrault, 1986: 61, Fig. 6). *L. trabzonicus* sp. n. differs from *L. chaudoiri* Perr. by the shape of pronotum (ratio PW/PBaW 1.80 in *L. trabzonicus* sp. n. and 1.36 in *L. chaudoiri* (both holotypes); ratio PW/PL 1.52 in *L. trabzonicus* sp. n. and 1.34 in *L. chaudoiri* (both holotypes); by acute posterior angles of pronotum (rectangular in *L. chaudoiri*), and by construction of the median lobe of the aedeagus, which is somewhat wider and has an apical lamella distinctly turned to the left (dorsal view, see Figs 5, 6 and Fig. 6 in Perrault, 1986: 61).

L. schuelkei sp. n. (which is described above from the same locality) has a different shape of the elytra (in *L. trabzonicus* sp. n., the elytra regularly rounded, with

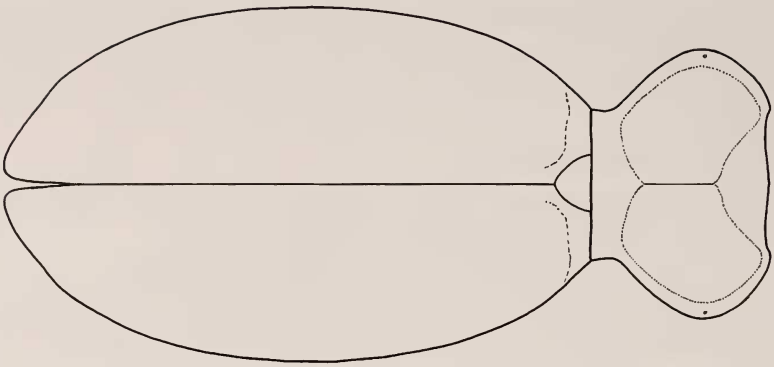
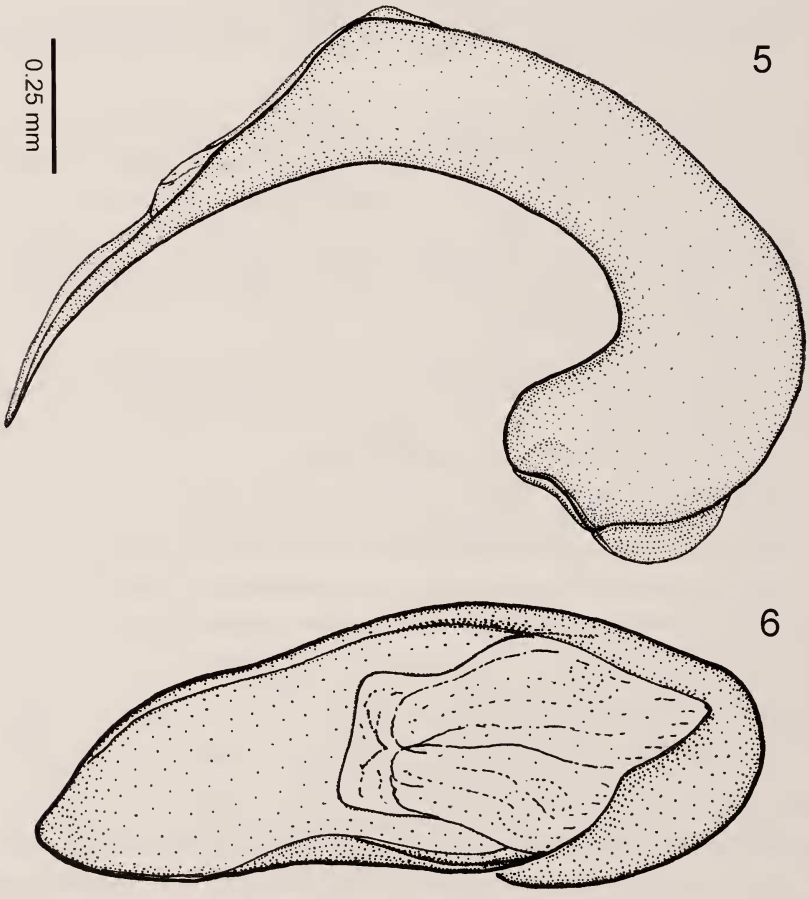


FIG. 4
Pronotum and elytra of *Leistus* (s.str.) *trabzonicus* sp. n. (holotype).



FIGS 5-6
Median lobe of aedeagus of *Leistus* (s.str.) *trabzonicus* sp. n., (holotype). (2) Lateral view. (3) Dorsal view.

maximum width at about middle, humeri somewhat suggested, humeral tooth missing, in *L. schuelkei* sp. n. elytra with maximum width behind middle, with humeral angle completely reduced, and with humeral teeth strongly developed). Important differences are in the construction of the median lobe: in *L. trabzonicus* sp. n. (Figs 5, 6) somewhat smaller with apical lamella thin, only weakly curved, and apically not distinctly deflexed (lateral view), median lobe wide with apical lamella short and wide, somewhat directed to the left (dorsal view), in *L. schuelkei* sp. n. the median lobe (Figs 2, 3) is somewhat larger and more robust, with apical lamella strong and long, apically somewhat acute, and bill-like deflexed (lateral view), median lobe slender with apical lamella slender, evenly narrowed, and apically narrowly rounded (dorsal view).

ETYMOLOGY: The specific name is derived from the name of the Turkish province Trabzon where the type locality is situated.

DISTRIBUTION: As the preceding species, currently only known from the type locality, which is situated in a high mountain steppe south of the village Of (south of Uzungöl, Trabzon province). Most probably with a limited range due to its inability to fly.

HABITAT: Collected in a high mountain steppe, free of timber, in a natural drainage channel (Fig. 7) by sifting grass and moss, at an altitude of about 2050 m (timber line in this area at about 1800 m). Sympatric and syntopic with *Leistus schuelkei* sp. n.

SPECIES OVERVIEW

Currently, the following nine species of the subgenus *Leistus* Fröl. are known from Turkey (sensu Löbl & Smetana 2003):

L. caucasicus Chaudoir, 1867: 261 (syn. *L. schuberti* Jedlička, 1968: 285)

DISTRIBUTION: Turkey, Israel, Russia, Syria, Cyprus.

TYPE LOCALITY: Caucasus.

TYPE MATERIAL: Holotype in collection of Maximilien Baron de Chaudoir, Museum National d'Histoire Naturelle, Paris (France).

L. chaudoiri Perrault, 1986: 62

DISTRIBUTION: Georgia (Meskhetskij Khrebet), Turkey (Doğu Karadeniz Dağları).

TYPE LOCALITY: Georgia, Abbastuman, Sekar Pass.

TYPE MATERIAL: Holotype in the collection of Museum für Naturkunde der Humboldt Universität, Berlin (Germany).

L. femoralis Chaudoir, 1846: 106

DISTRIBUTION: Georgia (Adzharskaya, Meskhetskij Khrebet), Turkey (Doğu Karadeniz Dağları).

TYPE LOCALITY: Georgia (Abbastuman, Meskhetskij Khrebet).

TYPE MATERIAL: Lectotype in collection of Maximilien Baron de Chaudoir, Museum National d'Histoire Naturelle, Paris (France).

L. fulvibarbis fulvibarbis Dejean, 1826: 215

DISTRIBUTION: Belgium, Canary Islands, France, Great Britain, Germany, Greece, Italy, The Netherlands, Portugal, Spain, Turkey.

TYPE LOCALITY: Portugal.

TYPE MATERIAL: Holotype in collection of Museum National d'Histoire Naturelle, Paris (France).

L. fulvus Chaudoir, 1846: 105

DISTRIBUTION: Armenia, Russia, Turkey.

TYPE LOCALITY: Lenkoran.

TYPE MATERIAL: Lectotype in collection of Maximilien Baron de Chaudoir, Museum National d'Histoire Naturelle, Paris (France).

L. ledouxi Perrault, 1986: 63

DISTRIBUTION: Turkey (Kaçkar Dağı).

TYPE LOCALITY: Čat [Çat], northern Kaçkar Dağı (Rize).

TYPE MATERIAL: Holotype in collection of Georges Ledoux, Clamart (France).

L. ovitensis Perrault, 1974: 35

DISTRIBUTION: Turkey (Doğu Karadeniz Dağları).

TYPE LOCALITY: Col d'Ovit (Rize).

TYPE MATERIAL: Holotype in the collection of Georges G. Perrault, Museum National d'Histoire Naturelle, Paris (France).

L. schuelkei sp. n.

DISTRIBUTION: Turkey.

TYPE LOCALITY: Trabzon, ca 40 km S Of, S Uzungöl.

TYPE MATERIAL: Holotype in collection of Jan Farkač, Prague (Czech Republic).

L. trabzonicus sp. n.

DISTRIBUTION: Turkey.

TYPE LOCALITY: Trabzon, ca 40 km S Of, S Uzungöl.

TYPE MATERIAL: Holotype in collection of Jan Farkač, Prague (Czech Republic).

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FIG. 7
Type locality of *Leistus* (s. str.) *schuelkei* sp. n. and *L.* (s. str.) *trabzonicus* sp. n. (photo M. Schülke)

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